HAYDEN LAKE RECREATION WATER AND SEWER
SOURCE WATER ASSESSMENT REPORT

November 3, 2000

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the watershed characteristics.

This report, *Source Water Assessment for Hayden Lake Recreation Water and Sewer (1280085)*, describes the public drinking water system, the zone boundary of water contribution, and the associated potential contaminant sources located within this boundary. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Hayden Lake Recreation Water and Sewer drinking water system consists of one surface water intake. The system has made recent improvements intended to meet the requirements of the Surface Water Treatment Rule. The newly installed water filtration system appears to be functioning well. Home building and logging activities in the watershed may occasionally lead to high levels of turbidity in Hayden Lake. While filtration systems work to remove this turbidity, at extremely high levels sediment can clog filtration equipment, increasing maintenance costs.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

The Hayden Lake Recreation Water and Sewer drinking water intake is located 750 feet off the east shore of Hayden Lake. The intake and water distribution systems are located in an area consisting mostly of summer homes. The lake is used extensively in the summer months for recreation. As general use of the area, and logging and home building activity increases, Hayden Lake Recreation Water and Sewer should focus their protection efforts on reducing the impacts of these activities. Since the source water area for Hayden Lake Water and Sewer is large, partnerships with state and local agencies and private landowners should be established and are critical to success. Due to the fairly short time associated with the movement of surface waters, source water protection activities should be aimed at short-term management strategies with the development of long-term management strategies to counter any future contamination threats.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact your regional IDEQ office or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR HAYDEN LAKE RECREATION WATER AND SEWER

Section 1. Introduction- Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area, a map showing the entire watershed contributing to the delineated area and the inventory of significant potential sources of contamination identified within the delineated area are attached.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the intakes and watershed characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (IDEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. IDEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

Hayden Lake Recreation Water and Sewer serves a community of approximately 76 people. The system is located on the east shore of Hayden Lake (Figure 1) and is comprised of one surface water intake.

The system is not currently facing significant water quality issues. The drinking water is disinfected and the system is operating with a new slow sand filter. Installation of the filter has brought the system into compliance with the Surface Water Treatment Rule. Occasionally, herbicides are used in Hayden Lake to control Eurasian Milfoil. The water system avoids exposure to these chemicals by shutting down the drinking water system during those times.

Defining the Zones of Contribution- Delineation

To protect surface water systems from potential contaminants, the EPA required that the entire drainage basin be delineated upstream from the intake to the hydrologic boundary of the drainage basin (U.S. EPA, 1997b). The EPA recognized that an intake on a large water body could have an extensive drainage basin. Therefore, the EPA recommended that large drainage basins be segmented into smaller areas for the purpose of implementing a cost-effective potential contaminant inventory and susceptibility analysis. The delineation process established the physical area around an intake that became the focal point of the assessment. The process included mapping the boundaries of the zone of contribution into a minimum buffer zone for lakes, which extends 500 ft. from the shoreline around the circumference of the lake. In addition to the buffer zone around the lake itself, creeks and rivers that discharge within the 500-ft. buffer will also have a buffer zone delineated. This buffer zone also extends from where the creek or river flows into the lake extend up tributaries to the remainder of the 25-mile boundary, or the 4-hour stream flow time-of-travel boundary, whichever is greater.

In addition to the source water delineation, IDEQ has included a 24-hour emergency response delineation to facilitate emergency-response activities. If a potential contaminant spills directly into a water body, the drinking water utility needs appropriate notification in order to turn off an intake, or switch to an alternative source. For lakes, this process was not necessary, as the entire water surface area of the lake along with a 500' buffer around the lake will be included in the delineation.

The delineated source water assessment area for Hayden Lake Recreation Water and Sewer can best be described as a polygon encompassing the entire watershed contributing to Hayden Lake. It contains a total of approximately 11,492 acres of land. The actual data used by IDEQ in determining the source water assessment delineation area are available upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of surface water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by IDEQ and from available databases.

The dominant land use in the area surrounding the Hayden Lake Recreation Water and Sewer intake and distribution system is residential as well as recreational. Many of the homes in the area are inhabited seasonally, with some year round residents.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply intake.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted during the summer of 2000. The first phase involved identifying and documenting potential contaminant sources within the Hayden Lake Recreation Water and Sewer Source Water Assessment Area through the use of computer databases and Geographic Information System (GIS) maps developed by IDEQ. The second or enhanced phase of the contaminant inventory was voluntary with system operator, Mike Myers, confirming the results of the initial survey.

A total of 19 potential contaminant sites are located within the delineated source water areas (see Table 1). Most of the potential contaminant sources within delineated source water areas are located in the outer reaches of the watershed. Potential contaminant sources located in the delineated source water area include three copper mines, two silver mines, one lead mine, one silicon mine, two gravel pits, two unidentified mines, two underground fuel storage tanks, three building contractors, a photographer and a landscaper. (Figure 1).

Contaminants of concern are primarily related to activities that increase turbidity in Hayden Lake. Table 1 summarizes the potential contaminants of concern and information source.

Figure 1. Hayden Lake Recreation Water and Sewer Delineation Location and Potential Contaminant Inventory

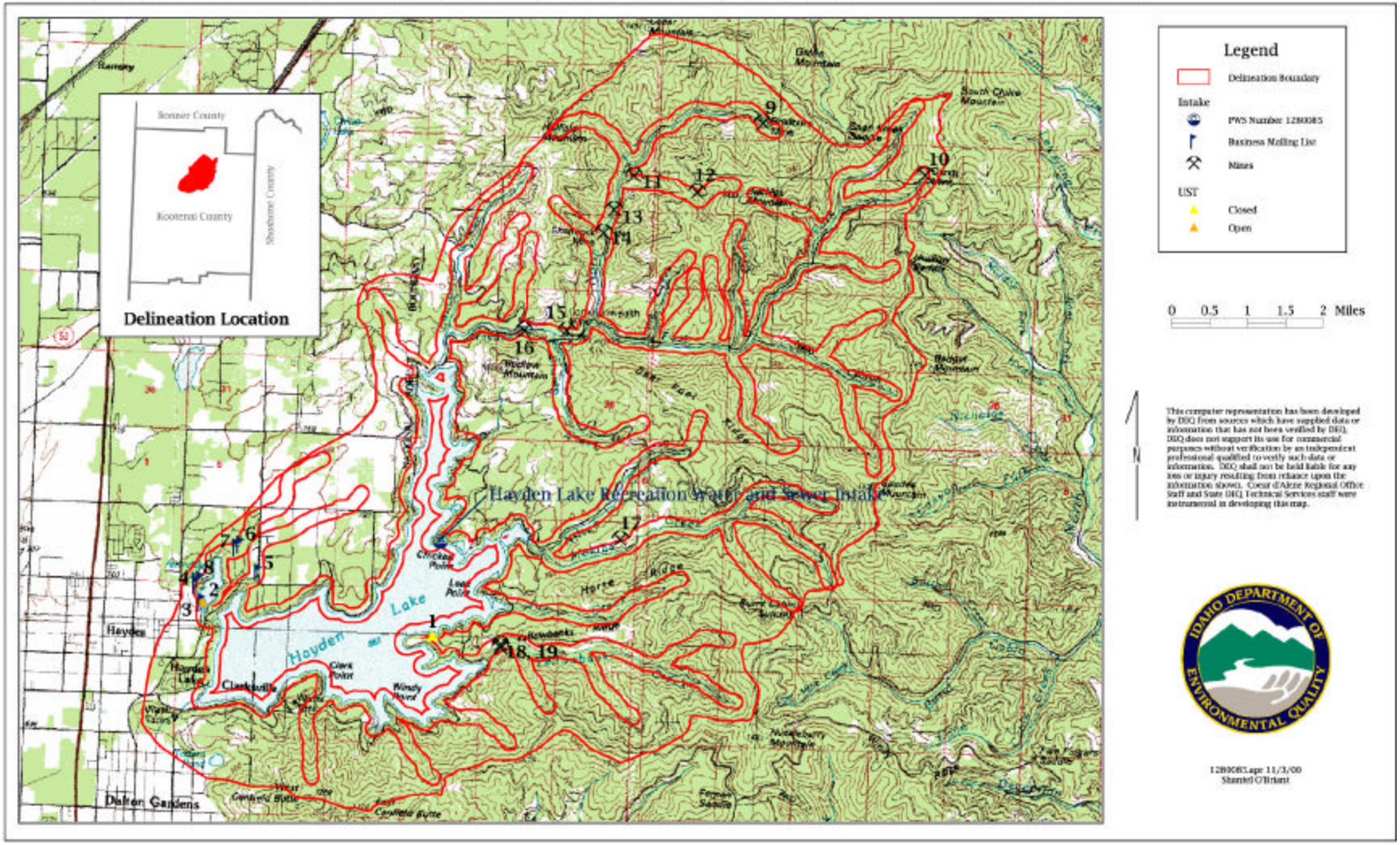

Table 1. Hayden Lake Recreation Water and Sewer Potential Contaminant Inventory Summary

SITE #	Source Description	Source of Information	Potential Contaminants
1	UST	Database Search	VOC, SOC
2	UST	Database Search	VOC, SOC
3	Golf Course	Database Search	VOC, SOC
4	Photographers- Portrait	Database Search	VOC, IOC
5	Landscape Contractor	Database Search	VOC, SOC
6	General Contractor	Database Search	VOC
7	Building Contractor	Database Search	VOC
8	Building Contractor	Database Search	VOC
9	Mine- Copper	Database Search	IOC
10	Mine- Silver	Database Search	IOC
11	Mine- Silicon	Database Search	IOC
12	Mine	Database Search	IOC
13	Mine	Database Search	IOC
14	Mine- Lead	Database Search	IOC
15	Mine- Copper	Database Search	IOC
16	Mine- Silver	Database Search	IOC
17	Mine- Copper	Database Search	IOC
18	Mine- Sand and Gravel	Database Search	Sediment
19	Mine- Sand and Gravel	Database Search	Sediment

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Analysis

Significant potential sources of contamination were ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity and construction of the intake, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each intake is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Intake Construction

The construction of the Hayden Lake Recreation Water and Sewer public water system intake directly affects the ability of the intake to protect the source from contaminants. The Hayden Lake Recreation Water and Sewer drinking water system consists of one intake that produces surface water for domestic use. Water production is monitored and managed by the system operator. The intake system construction score was moderate, reflecting an intake that provides a measure of protection from potential contaminant sources, but is not located in an infiltration gallery.

The intake is located below the homes that it serves, 750 feet from the east shore of Hayden Lake at a depth of 50 feet.

Potential Contaminant Sources and Land Use

The Hayden Lake Recreation Water and Sewer intake rated in the low category for the inorganic chemical class, volatile organic chemicals, and synthetic organic chemicals, revealing the intake as unlikely to be contaminated by these types of contaminants.

In terms of the total susceptibility score, it can be seen from Table 2 that the intake showed a low susceptibility for microbial contamination, which is generally related to storm water runoff and a high density of individual septic systems in an area.

Table 2. Summary of Hayden Lake Recreation Water and Sewer Susceptibility Evaluation

	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
Intake	IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
1	L	L	L	L	M	L	L	L	L

H = High Susceptibility, M = Moderate Susceptibility, Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
H* - Indicates source automatically scored as high susceptibility due to presence of either a VOC, SOC or an IOC above the Maximum Contaminant Level in the finished drinking water.

Susceptibility Summary

The Hayden Lake Recreation Water and Sewer drinking water system is currently not directly threatened by documented potential sources of contamination, but may experience maintenance problems related to levels of high turbidity. The intake is located in an area that experiences both logging and home building activities, both sources of sediment. High levels of turbidity can increase a system's demand for disinfectant and clog filtration equipment resulting in increased operation costs and possibly leading to turbidity violations.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For Hayden Lake Recreation Water and Sewer, source water protection activities should focus on implementation of practices aimed at reducing the impacts of future development and logging in the immediate vicinity of the source water intake. Most of the delineated area is not owned by Hayden Lake Recreation Water and Sewer, therefore partnerships with state and local agencies and private landowners should be established and are critical to success. Due to the relatively short time involved with the movement of surface water, source water protection activities should be aimed at short-term management strategies with an emphasis on dealing with long-term future impacts from these same sources.

Assistance

Public water suppliers and others may call the following IDEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the IDEQ office for preliminary review and comments.

Coeur d'Alene Regional IDEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

Website: http://www.deq.state.id.us

Attachment A

Hayden Lake Recreation Water & Sewer Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined from the addition of the Potential Contaminant Source/Land Use Score and Source Construction Score.

Final Susceptibility Scoring:

0 - 7 Low Susceptibility

8 - 15 Moderate Susceptibility

>16 High Susceptibility

Surface Water Susceptibility Report Public Water System Name : HAYDEN LAKE RECREATION WATER AND SEWER Intake : HAYDEN LAKE

Public Water System Number 1280085 11/3/00 1:05:56 PM

1. System Construction		SCORE
Intake structure properly constructed	YES	0
Infiltration gallery or well under the direct influence of Surface Water	NO	2
	Total System Construction Score	2

2. Potential Contaminant Source / Land Use		IOC Score	VOC Score	SOC Score	Microbial Score
Predominant land use type (land use or cover)	BASALT FLOW, UNDEVELOPED, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
Significant contaminant sources *	NO				
Sources of class II or III contaminants or microbials		0	0	0	0
Agricultural lands within 500 feet	YES No Agricultural Land within this zone	0	0	0	0
Three or more contaminant sources	YES	1	1	1	0
Sources of turbidity in the watershed	NO	0	0	0	0
	Total Potential Contaminant Source / Land Use Score	1	1	1	0
3. Final Susceptibility Source Score		3	3	3	2
4. Final Source Ranking		Low	Low	Low	Low

* Special consideration due to significant contaminant sources
The source water has no special susceptibility concerns

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund@ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.